



## Sustainability – the future of growing food

The recent Report by Blake Holgate, the Rural Manager of Sustainable Farm Systems at Rabobank here in New Zealand, contains the following statement,

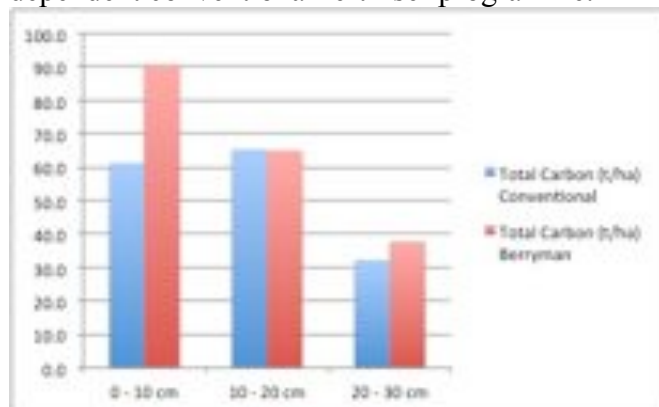
*“Consumers are no longer only interested in price, taste and nutritional content, but also want to know where their food came from and how it was produced.”*

The world is changing and the pace of that change is breath-taking. Within three years farming practices including soil nutrient applications will be markedly different to those now being practised by the majority of farmers. However for Functional Fertiliser clients it will be a familiar and comfortable process.

Conventional farming practices based on fertiliser nitrogen driven systems are not sustainable, by any definition of the word.

The work by Louis Schipper of Waikato University, whose findings published in 2011 by BOP Regional Council, showed that intensive pastoral farming e.g. dairying in the region was losing carbon on average at the rate of 1.0 tonne/ha/year for the last thirty years.

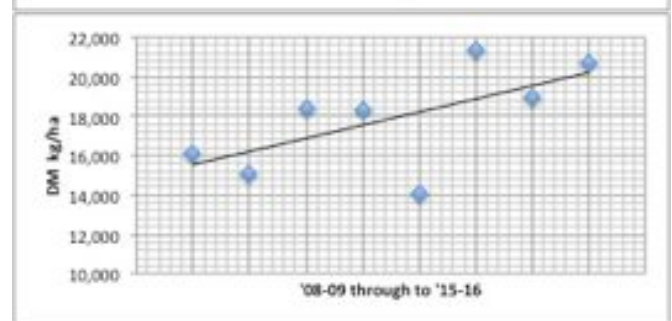
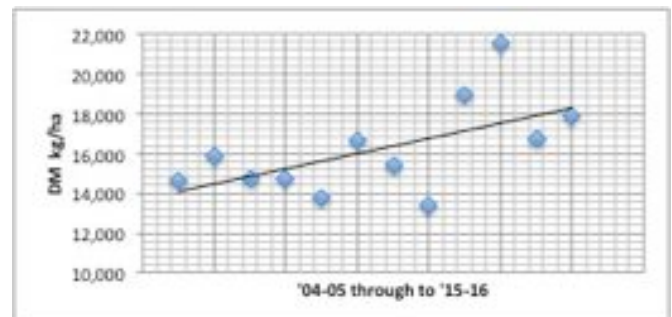
Following are the measures from the Berryman property and a neighbouring property using an N dependent conventional fertiliser programme.



This shows the Berryman property contains 34.7 tonne (22%) more carbon in the top 30cm. Perhaps even more significantly there is 29.4 tonne (48%) more in the top 10cm.

There is a close relationship between soil held carbon and pasture production. With less carbon in the soil the potential for pasture growth steadily declines.

The following graphs from the two Functional Fertiliser monitor properties shows the opposite to be the case.



Our view is that the steadily increasing production is due primarily to carbon being sequestered.

While acknowledging that there is a limit to the carbon concentration in the soil there is no limit to the amount of soil that can be developed.

A further project is underway on two other properties to obtain further carbon measures to better understand the rate at which carbon is being sequestered under CalciZest/DoloZest based nutrient programmes.

The importance of soil held carbon cannot be overstated; however soils are far more than just carbon and minerals. In 2004, Dr Graham Sparling, then of Landcare Research, stated that soil is only soil if it has biological activity and we are very lucky to have it, and went on to say, *“The soil process of denitrification is the only process*

whereby we can get reactive nitrogen from the soil and water back into benign nitrogen gas.

But at present we seem to be headed in the opposite direction, adding ever more nitrogen and phosphorous to our soils.”

It is not necessarily the amount of nutrient in the soil. It is more the speed at which the plant available fraction is being replenished that dictates crop or pasture growth. A standard soil test is

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The recent pasture cuts show the wetter areas performing less strongly, probably due to treading damage over winter and early spring, although soil temperatures have been around 2.0°C lower than usual.

There’s been less direct sunlight hours in most areas which will be one of the reasons for less clover in the sward.

Still plenty of time for clover to flourish and fix all the nitrogen

necessary for out-standing production over summer, autumn, and winter.

Bloat and clover don’t necessarily go together. Historically they have always been linked and for good reason.

Work by Dr Max Turner of Massey University showed a clear link between the incidence of bloat and high levels of potassium in the plant. High potassium concentrations almost inevitably mean low sodium.

In moist soil rapidly growing clover, and lucerne, have a hollow stem. Moisture being taken in by the plant will contain significant potassium and when eaten before it is fully mature often results in rapid and severe bloat.

Clover and lucerne grown under a Functional Fertiliser programme, with a higher input of calcium, results in stronger plants with solid centred stems, particularly when grazed when the plant has just passed the rapid growth phase. Which makes sense of the experience reported by

designed to measure only the nutrient that is plant available, usually somewhere between 1-5% of total soil held nutrient.

The speed at which nutrient is cycled relies almost entirely on biological activity, which in turn is dependent on the state of the physical structure.

Soil in an ideal state is 25% air and 25% moisture with an excellent crumb structure to at least 250mm depth.

\* \* \* \*

clients of bloat-free stock grazing pastures that previously would have been regarded as high risk.



[there’s more than one 4-leaved clover in here!]

Bloat-free can never be guaranteed and it’s important to be vigilant and have a plan in place during still, warm, rapid growth conditions.

**Back to carbon**

It is almost inevitable that carbon either lost or gained under pastoral farming will have to be accounted for. For those sequestering, there may well be carbon credits to be gained which could have a significant dollar

value attached.

More importantly it’s about removing carbon from the atmosphere, storing it in the soil, and using it to help ensure a supply of clean fresh water.

David Attenborough said recently, *“There has never been a time in history when the natural environment has been under greater threat than it is now and therefore the need for new ideas and innovation to combat the destruction of nature upon which we all depend for the future has never been greater.”*

Intensive pastoral farming is not of itself destructive. It’s how it’s carried out that determines whether it’s a finite activity of ever diminishing returns or a genuinely sustainable environmentally positive activity.

**CalciZest** and **DoloZest** were developed as soil improvers designed to improve physical soil structures, provide a healthy dose of beneficial soil microbes, speeding the rate of nutrient cycling, thereby increasing total annual pasture production.

**All the best for the festive season,**



*Reis*

&

*Cerale*

